

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An injection-molding method for covering a plate-shaped member having a through hole ~~reaching~~ extending from a front face to a rear face with a molded layer by injection-molding, the injection-molding method comprising the steps of:

~~a step of~~ preparing a first die having a gate that will face the through hole and a front side cavity face that will face the front face of the plate-shaped member, a second die having a receiving face for receiving the rear face of the plate-shaped member and a pin for blocking the through hole, and a third die having a rear side cavity face that will face the rear face of the plate-shaped member;

~~a step of~~ sandwiching the plate-shaped member with the first die and the second die and forming a front side cavity with the front side cavity face of the first die and the front face of the plate-shaped member;

~~a step of~~ molding a front side molded layer to the front face of the plate-shaped member by injecting a molding material such as resin through the gate into ~~this~~ the front side cavity;

~~a step of~~ opening the through hole and forming a front side cavity with the rear side cavity face of the third die and the rear face of the plate-shaped member by replacing the second die with the third die; and

~~a step of molding a rear side molded layer to the rear face of the plate-shaped member by piercing the front side molded layer with an injection pressure injecting molding material through the gate and filling the rear side cavity with molding material by way of the through hole.~~

2. (Currently Amended) An injection-molding apparatus including a first die, a second die, a third die, and means for moving the second and third dies, said apparatus being constructed to mold a front side molded layer to a front face of a plate-shaped member by sandwiching the plate-shaped member with a-the first die and a-the second die being closed and thereby forming a front side cavity with the front face of the plate-shaped member and the first die and filling this-the front side cavity with a molding material such as resin and to mold a rear side molded layer to the rear face of the plate-shaped member by replacing the second die with a third die and sandwiching the plate-shaped member with the third die and the first die and thereby forming a rear side cavity with the rear face of the plate-shaped member and the third die and filling this-the rear side cavity with a molding material such as resin, the injection molding apparatus being characterized in thatwherein:

the first die includes a gate for injecting molding material into the front side cavity and the rear side cavity, is provided in the first die and this said gate is made being adapted to face a through hole formed in the plate-shaped member;

the second die includes a receiving face for making contact with the rear face of the plate-shaped member, and wherein the receiving face includes is provided on the second die and a pin able adapted to fit in the through hole is provided on the receiving face; and

to replace the second die with the third die, the moving means is adapted to move are provided for moving the second and third dies between a facing position facing the first die and a withdrawn position away from the first die.

3. (Currently Amended) ~~An~~ The injection-molding apparatus according to claim 2, characterized in that wherein the third die includes a support projection for supporting the plate-shaped member by abutting with ~~it~~ the plate-shaped member near the through hole ~~is provided on the third die~~.

4. (Currently Amended) An injection-molding method for covering a front face and a rear face of a plate-shaped member with a molded layer by injection-molding, the injection-molding method comprising the steps of:

~~a step of~~ preparing a first die having a front side cavity face that will face the front face of the plate-shaped member and a first gate opening at ~~this~~ the front side cavity face and a first pressure sensor ~~fronted on~~ communicating with the front side cavity face and preparing a second die having a rear side cavity face that will face the rear face of the plate-shaped member and a second gate opening at the rear side cavity face and a second pressure sensor ~~fronted on~~ communicating with the rear side cavity face;

~~a step of~~ sandwiching the plate-shaped member with the first die and the second die and thereby forming a front side cavity with the front side cavity face of the first die and the front face of the plate-shaped member and forming rear side cavity with the rear side cavity face of the second die and the rear face of the plate-shaped member;

~~a step of injecting a molding material such as resin through the first gate into the front side cavity and injecting a molding material through the second gate into the rear side cavity; and~~

~~a step of stopping the injection of molding material into the front side cavity when a measured value of the first pressure sensor reaches a prescribed value and stopping the injection of molding material into the rear side cavity when a measured value of the second pressure sensor reaches a prescribed value, to mold front and rear side molded layers respectively in the front and rear side cavities.~~

5. (Currently Amended) An injection-molding apparatus comprising a first die, a second die, a third die, and control means, said apparatus being constructed to sandwich a plate-shaped member with first and second dies and thereby form a front side cavity with a front face of the plate-shaped member and the first die and form a rear face cavity with a rear face of the plate-shaped member and the second die and fill the front and rear side cavities with a molding material such as resin to mold a front side molded layer to the front face of the plate-shaped member and mold a rear face molded layer to the rear face of the plate-shaped member, the injection-molding apparatus being characterized in thatwherein:

~~in the first die it has a first gate fronting on communicating with the front side cavity and a first pressure sensor for measuring the an internal pressure of the front side cavity;~~

~~in the second die it has a second gate fronting on communicating with the rear side cavity and a second pressure sensor for measuring the an internal pressure of the rear side cavity; and~~

it has the control means for ~~stopping the~~ is adapted to stop injection of molding material into the front side cavity ~~on the basis of~~ based upon a signal from the first pressure sensor when the internal pressure of the front side cavity has reached a prescribed value and ~~stopping the~~ to stop injection of molding material into the rear side cavity ~~on the basis of~~ based upon a signal from the second pressure sensor when the internal pressure of the rear side cavity has reached a prescribed value.

6. (Currently Amended) An injection-molding method for covering a front face and a rear face of a plate-shaped member with a molded layer by injection-molding, the injection-molding method comprising the steps of:

~~a step of preparing a first die having a front side cavity face that will cover the front face of the plate-shaped member, and a first gate opening at the front side cavity face, and a second gate avoiding the front side cavity face, and switching means for guiding molding material to either one of the first and second gates;~~

~~preparing a second die having a receiving face for receiving the rear face of the plate-shaped member; and~~

~~preparing a third die having a rear side cavity face that will cover the rear face of the plate-shaped member and a connecting passage that will cause the second gate to open at the rear side cavity face;~~

~~a step of sandwiching the plate-shaped member with the first die and the second die and forming a front side cavity with the front side cavity face of the first die and the front face of the plate-shaped member;~~

~~a step of injecting a molding material such as resin through the first gate into~~

the front side cavity to mold a front side molded layer;

~~a step of~~ replacing the second die with the third die and thereby forming a ~~front~~rear side cavity with the rear side cavity face of the third die and the rear face of the plate-shaped member; and

~~a step of~~ injecting a molding material through the second gate and the connecting passage into the rear side cavity to mold a rear side molded layer.

7. (Currently Amended) An injection-molding apparatus comprising a first die, a second die, a third die, and means for moving the second and third dies, said apparatus being constructed to mold a front side molded layer to a front face of a plate-shaped member by closing the first and second dies and sandwiching the plate-shaped member and thereby forming a front side cavity with the front face of the plate-shaped member and the first die and filling ~~this~~the front side cavity with a molding material such as resin and to mold a rear side molded layer to a rear face of the plate-shaped member by replacing the second die with a third die and sandwiching the plate-shaped member with the third die and the first die and thereby forming a rear face cavity with the rear face of the plate-shaped member and the third die and filling ~~this~~the rear face cavity with molding material, ~~the injection-molding apparatus being characterized in that~~wherein:

~~the first die is provided with~~includes a first gate facing the front side cavity, and a second gate avoiding the rear side cavity, and switching means for guiding molding material to either one of the first and second gates;

~~the second die is provided with~~includes a receiving face for making contact with the rear face of the plate-shaped member;

the third die is ~~provided with~~ includes a connecting passage for connecting the second gate to the rear side cavity; and

~~to replace the second die with the third die, the~~ moving means are provided for ~~moving~~ adapted to move the second and third dies between a facing position facing the first die and a withdrawn position away from the first die so as to permit the second die to be replaced with the third die.

8. (Currently Amended) ~~An~~ The injection-molding apparatus according to claim 2, ~~claim 3 or claim 7 characterized in that~~ wherein the front side cavity and the rear side cavity are formed so that the front side molded layer and the rear side molded layer are made to extend as far as ~~the~~ an outer edge of the plate-shaped member and such that the molded layers contact one another and the two layers are brought into contact.

9. (New) The injection-molding apparatus according to claim 3, wherein the front side cavity and the rear side cavity are formed so that the front side molded layer and the rear side molded layer are made to extend as far as an outer edge of the plate-shaped member and such that the molded layers contact one another.

10. (New) The injection-molding apparatus according to claim 7, wherein the front side cavity and the rear side cavity are formed so that the front side molded layer and the rear side molded layer are made to extend as far as an outer edge of the plate-shaped member and such that the molded layers contact one another.